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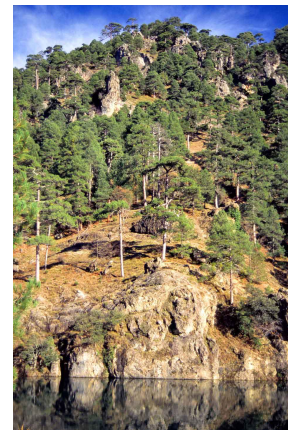
Model for *Pinus nigra* stands Castilla y León (Spain)

Model

Pnigra_stand_cyl_v01.py

Model description

- Specie: *Pinus nigra* Arnold
- Spanish Forest Inventory (SFI) code: 25
- Geographical area: Castilla y León
- Geographical area (administrative): León, Palencia, Burgos, Zamora, Valladolid, Soria, Salamanca, Ávila and Segovia



Model type

- Category: stand growth
- Model level: stand
- Reproduction methods: seedling forest
- Stand structure: even-aged stands
- Species composition: monospecific stands
- Forest origin: natural

Model requirements and recommended use

- Initial inventory requirements: age, dominant height, basal area and density of the plot
- Geographical area: Castilla y León, closer places and another places with similar characteristics (assuming differences)
- Stand type: monospecific stands
- Execution recommended time: 5 years executions (survival and growth equations developed by using that criteria)
- Site Index is defined as top height at a base age of 50 years

Figure 1: *Pinus nigra*, by Felipe Castilla, website <http://www.arbolapp.es/especies/ficha/pinus-nigra/>



Figure 2: Details of *Pinus nigra*, by <https://antropocene.it>

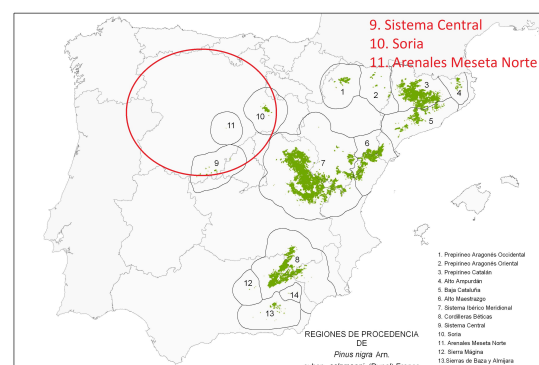
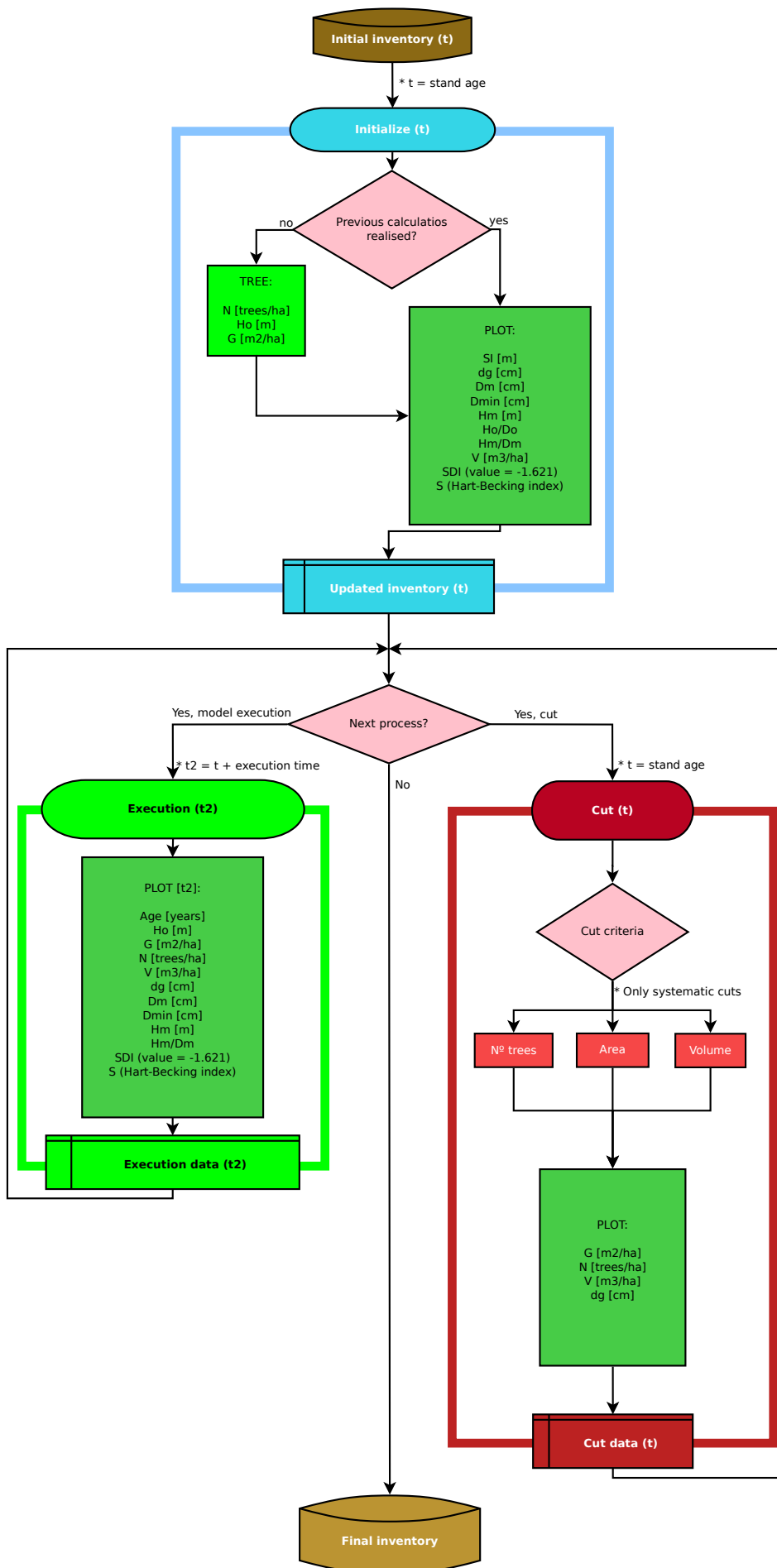


Figure 3: Provenance regions of *Pinus nigra* in Spain, by MAPA

Bibliography

Model components:

- **Calculations by using tree data** (just in cases when that information is not available at the initial inventory):
Density, Basal Area and Dominant Height
- **Site Index and Quality Index equations:**
del Río M, López E, Montero G (2006). Manual de gestión para masas procedentes de repoblación de *Pinus pinaster* Ait. *Pinus sylvestris* L. y *Pinus nigra* Arn. en Castilla y León, 1-102
- **Dominant Height Growth equation:**
del Río M, López E, Montero G (2006). Manual de gestión para masas procedentes de repoblación de *Pinus pinaster* Ait. *Pinus sylvestris* L. y *Pinus nigra* Arn. en Castilla y León, 1-102
- **Survival equation:**
Mora JV, del Río M, Bravo-Oviedo A (2012). Dynamic growth and yield model for Black pine stands in Spain. *Forest systems*, 21(3), 439-445
- **Growth Basal Area equation:**
Mora JV, del Río M, Bravo-Oviedo A (2012). Dynamic growth and yield model for Black pine stands in Spain. *Forest systems*, 21(3), 439-445
- **Initial and Growth Volume equation:**
Mora JV, del Río M, Bravo-Oviedo A (2012). Dynamic growth and yield model for Black pine stands in Spain. *Forest systems*, 21(3), 439-445
- **Mean Height equation**
del Río M, López E, Montero G (2006). Manual de gestión para masas procedentes de repoblación de *Pinus pinaster* Ait. *Pinus sylvestris* L. y *Pinus nigra* Arn. en Castilla y León, 1-102
- **Mean Diameter and Minimum Diameter equations:**
Mora JV, del Río M, Bravo-Oviedo A (2012). Dynamic growth and yield model for Black pine stands in Spain. *Forest systems*, 21(3), 439-445
- **Value for Reineke Index equation:**
del Río M, López E, Montero G (2006). Manual de gestión para masas procedentes de repoblación de *Pinus pinaster* Ait. *Pinus sylvestris* L. y *Pinus nigra* Arn. en Castilla y León, 1-102
- **Quadratic Mean Diameter and Hart Index equation:**
Standard equations
- **Quadratic Mean Diameter, Hart and Reineke Index equations:**
Standard equations
- **Harvest equations:**
Harvest equations developed by using equations mentioned before.



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Interest Links

SIMANFOR - Support system for simulating Sustainable Forest Management Alternatives. Accessed 11 May 2021, in <https://www.simanfor.es/>

iuFOR - Sustainable Forest Management Research Institute UVa-INIA. Accessed 11 May 2021, in <http://sostenible.palencia.uva.es/>

ETSIIAA Palencia - Higher Technical School of Agricultural Engineering of Palencia. Accessed 11 May 2021, in <http://etsiiaa.uva.es/>

UVa - University of Valladolid. Accessed 11 May 2021, in <https://www.uva.es>

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